

Laparoscopy-Assisted Supracervical Hysterectomy for Ovarian Cancer: Cervical Recurrence

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ABSTRACT

Background and Objectives: The purpose of our study is to evaluate the incidence of cervical recurrence after laparoscopic supracervical hysterectomy for ovarian cancer debulking or staging.

Methods: From a prospective surgical database, we identified 51 cases of laparoscopic supracervical hysterectomy for ovarian cancer debulking or staging. No cases were excluded.

Results: From 2009 to 2012, 51 patients were identified. The median age was 62 years (range, 32–83 years), and the median body mass index was 29 kg/m² (range, 16–41 kg/m²). Medical comorbidities were present in 40 patients (78%), and 53% had prior abdominal surgery. The median operative time was 2 hours (range, 1–3.5 hours), and the median blood loss was 200 mL (range, 50–900 mL). The median length of stay was 1 day (range, 0–12 days). The stage was I in 12 patients, II in 6, and III/IV in 33. At a median follow-up time of 1.7 years (range, 0.3–2.6 years), 20 patients (39%) had recurrence of cancer, with a median time of recurrence of 1.1 years (range, 0.3–2.3 years). All recurrences were in the abdomen or pelvis except for 1 axillary node recurrence and 1 recurrence in the distal vagina. There were no recurrences in the remaining cervical stump. No patient had a postoperative vaginal cuff infection. Among the 104 cycles of intraperitoneal chemotherapy, there was no vaginal leakage of intraperitoneal chemotherapy.

Conclusion: Laparoscopic supracervical hysterectomy for ovarian cancer debulking or staging does not result in cervical recurrence.

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Key Words: Laparoscopic supracervical hysterectomy, Ovarian cancer, Subsequent cervical metastases.

INTRODUCTION

About 22 000 women will have been diagnosed with epithelial ovarian cancer in the United States in 2011.¹ Unlike most other cancers, all stages of epithelial ovarian cancer are treated surgically, which typically involves hysterectomy. After surgery, most patients receive chemotherapy.

Prospective randomized trials have proven the benefits of laparoscopic gynecologic surgery: decreased pain, decreased surgical-site infection (decreased relative risk, 80%), decreased hospital stay (2 fewer days), quicker return to activity (2 weeks sooner), and fewer postoperative adhesions (decreased by 60%).² Though originally more costly, with increasing experience, the length of laparoscopic procedures has shortened, resulting in costs similar to laparotomy.³ Laparoscopic staging of early ovarian cancer and laparoscopic secondary cytoreductive surgery for recurrent ovarian cancer have been described.⁴ We have reported on our experience with laparoscopy-assisted cytoreduction for primary advanced ovarian cancer.^{5,6}

Laparoscopic supracervical hysterectomy (LSCH) has potential benefits compared with total laparoscopic hysterectomy (TLH) or laparoscopy-assisted vaginal hysterectomy for ovarian cancer patients who receive postoperative chemotherapy. LSCH may be associated with fewer cases of postoperative vaginal cuff infection, a complication that would delay chemotherapy.^{7–9} In addition, LSCH may prevent vaginal leakage of intraperitoneal chemotherapy.^{10–12} A potential risk of LSCH is ovarian cancer recurrence in the remaining cervical stump. The purpose of our study is to evaluate the incidence of cervical recurrence after LSCH for ovarian cancer debulking or staging.

MATERIALS AND METHODS

All patients undergoing surgery at our division of gynecologic oncology were entered into a prospective surgical

database. Demographic characteristics were obtained and entered into the database preoperatively, surgical outcomes were entered into the database immediately postoperatively, and follow-up data were entered into the database after each office examination. Patients were followed up in the office at 1 and 4 weeks after surgery and every 3 weeks during chemotherapy, as well as every 3 to 6 months thereafter for 5 years. Cervical examination was performed at all 3- to 6-month office visits and during examination of patients under anesthesia if laparoscopic secondary cytoreductive surgery was performed at the time of recurrence. We reviewed the prospective surgical database for all cases of ovarian cancer. No cases were excluded. We identified 122 surgical cases of ovarian cancer, of which 51 included LSCH for ovarian cancer primary debulking or staging. Seventy-one cases were deemed ineligible for the following reasons: secondary debulking in 27, prior hysterectomy in 24, gastrointestinal primary in 5, intraperitoneal ports in 5, laparotomy in 5, conservative staging (uterus retained for fertility) in 3, and small-bowel obstruction in 2. Tumors of low malignant potential were not included.

It is our practice to attempt LSCH for ovarian cancer debulking or staging in all cases. We have previously described our technique of laparoscopy-assisted cytoreduction with supracervical hysterectomy (SCH).^{5,6} In brief, round ligaments were excised with PlasmaKinetic (PK) cutting forceps (Gyrus ACMI, Southborough, Massachusetts). The retroperitoneal spaces were dissected, both ureters were identified, and the infundibulopelvic ligaments were excised with the PK cutting forceps. The anterior and posterior leaf of the broad ligament was dissected, and the bladder was dissected off the cervix with monopolar electrocautery. The uterine vessels and cardinal and uterosacral ligaments were then coagulated and cut with the PK cutting forceps. An SCH was completed by excising the upper endocervix with the PK cutting forceps. Use of the Trendelenburg position was discontinued, and the omentum was retracted toward the pelvis with graspers through the lower-quadrant ports. The lateral attachments of the infracolic omentum were excised with the PK cutting forceps. If the omental metastasis was not densely adherent to the transverse colon, the entire omentectomy was performed with the PK cutting forceps. A 6-cm periumbilical Maylard incision was performed, and the omentum, uterus, and ovaries were manually delivered. When an adherent omental metastasis was present, the omentum was delivered through the incision and the remainder of the omentectomy was performed by a traditional approach. The transverse colon

was delivered through the incision, inspected, and oversewn as necessary. Large ovarian masses were decompressed at the abdominal incision to assist extraction. When a bulky pelvic tumor was encountered, manual resection of the cul-de-sac tumor was performed through the periumbilical Maylard incision. When small-bowel resection was necessary, lysis of adhesions was performed laparoscopically and the segment of small bowel was delivered through the incision and stapled resection and reanastomosis were performed. The periumbilical Maylard incision was closed with a running mass closure with a delayed absorbable monofilament suture. A laparoscopic 5-mm argon-beam coagulator (ABC) (ValleyLab, Boulder, Colorado) was used to coagulate residual tumor in the pelvis, abdominal peritoneum, intestinal mesentery, and diaphragm. We ablated residual tumor using the ABC rather than performing resections such as partial colectomy and diaphragm stripping. The ABC was used at a setting of 50 to 70 W and an argon gas flow setting of 4 L/min.

Patients with stage III/IV tumors, a cytoreductive status of <1 cm, and minimal adhesions were treated with postoperative intraperitoneal chemotherapy.

Penn State Milton S. Hershey Medical Center Institutional Review Board approval was obtained for this study.

RESULTS

From 2009 to 2012, 51 patients were identified. The median age was 62 years (range, 32–83 years), and the median body mass index was 29 kg/m² (range, 16–41 kg/m²). Medical comorbidities were present in 40 patients (78%), and 53% had prior abdominal surgery.

The operative findings are presented in **Table 1**. The median operative time was 2 hours (range, 1–3.5 hours), and the median blood loss was 200 mL (range, 50–900 mL). The median length of stay was 1 day (range, 0–12 days). The stage was I in 12, II in 6, III in 32, and IV in 1. The cytoreductive status was microscopic in 61%, <1 cm in 37%, and >1 cm in 2%. Serous histology was present in 59% of tumors.

At a median follow-up time of 1.7 years (range, 0.3–2.6 years), 20 patients (39%) had recurrence of cancer, with a median time of recurrence of 1.1 years (range, 0.3–2.3 years) (**Table 2**). Of the 20 recurrences, 17 (85%) were in patients with stage III/IV tumors. All recurrences were in the abdomen or pelvis except for 1 axillary node recurrence and 1 recurrence in the distal vagina. There were no recurrences in the remaining cervical stump.

Table 1.
Operative Findings

| | Data |
|----------------------------------|--------------|
| Operative time [median (SD)] (h) | 2 (1–3.5) |
| Blood loss [median (SD)] (mL) | 200 (50–900) |
| Length of stay [median (SD)] (d) | 1 (0–12) |
| Stage | |
| I | 12 (23%) |
| II | 6 (12%) |
| III | 32 (63%) |
| IV | 1 (2%) |
| Cytoreductive status | |
| Microscopic | 31 (61%) |
| <1 cm | 19 (37%) |
| >1 cm | 1 (2%) |
| Histology | |
| Serous | 30 (59%) |
| Mucinous | 8 (15%) |
| Endometrioid | 5 (10%) |
| Clear cell | 6 (12%) |
| Sarcoma | 2 (4%) |

Table 2.
Results

| Stage | No. | Recurrence ^a | NED ^b | AWD ^b | DOD ^b |
|--------|-----|-------------------------|------------------|------------------|------------------|
| I | 12 | 1 (8%) | 11 (92%) | | 1 (8%) |
| II | 6 | 2 (33%) | 4 (67%) | 1 (17%) | 1 (17%) |
| III/IV | 32 | 17 (53%) | 16 (50%) | 11 (34%) | 5 (16%) |

^aThere were no recurrences in the remaining cervical stump.

^bAWD = alive with disease; DOD = dead of disease; NED = no evidence of disease.

Of the patients, 8 (16%) had postoperative complications. No patient had a postoperative vaginal cuff infection. Acute tubular necrosis developed in 1 patient and resolved spontaneously on postoperative day 3. Pneumonia developed in 1 patient, requiring a 7-day hospital stay. Four patients (2 of whom had small-bowel resection during debulking) had ileus, which resolved without nasogastric tube decompression. A skin infection developed in 1 patient. Urinary retention developed in 1 patient. Among the 104 cycles of intraperitoneal chemotherapy, there was no vaginal leakage of intraperitoneal chemotherapy.

DISCUSSION

The benefits of laparoscopic gynecologic surgery versus laparotomy have been documented in prospective randomized trials: decreased pain, decreased surgical-site infection, decreased hospital stay, quicker return to activity, and fewer postoperative adhesions.² We have reported on our experience with laparoscopic staging of early ovarian cancer, laparoscopic secondary cytoreductive surgery for recurrent ovarian cancer, and laparoscopy-assisted cytoreduction for primary advanced ovarian cancer.^{4–6} LSCH has potential benefits compared with TLH or laparoscopy-assisted vaginal hysterectomy for ovarian cancer patients who receive postoperative chemotherapy. However, a potential risk of LSCH is ovarian cancer recurrence in the remaining cervical stump. Because ovarian cancer spreads primarily in the peritoneal cavity and the cervical stump is extraperitoneal (in the vagina), involvement of the cervical stump by ovarian cancer should be rare. In our study, of the 51 patients who underwent LSCH, 20 have had recurrences, but none in the cervix. A PubMed literature search of cervical metastases from primary ovarian cancer yielded case reports and small case series with the majority describing cervical metastases diagnosed concurrently or before the ovarian cancer. We were unable to locate any similar studies of LSCH for ovarian cancer and recurrence in the remaining cervical stump. We were able to locate a single study of abdominal SCH compared with total abdominal hysterectomy (TAH).¹³ In this study the vaginal/cervical recurrence rate was 11% in the SCH group and 12% in the TAH group. Regarding the patients with recurrence, there was a higher rate of vaginal tumor erosion in the patients who underwent TAH. It is uncertain, though, what percentage of recurrences were cervical or vaginal.

LSCH may be associated with fewer cases of postoperative vaginal cuff infection, a complication that would delay chemotherapy. In our study no patient had a postoperative vaginal cuff infection. We were unable to locate any similar studies of LSCH for ovarian cancer and postoperative vaginal cuff infections. However, in a national commercial claims database review of 20 379 patients with benign disease, LSCH was associated with a significantly lower infection rate than laparoscopy-assisted vaginal hysterectomy.⁷ Hoffman et al⁸ compared the surgical outcomes of 614 patients undergoing LSCH or TLH for benign disease and found a statistically significant difference in the development of pelvic cellulitis: 3% of LSCH patients versus 7% of TLH patients ($P = .01$). Similarly, a comparative analysis of perioperative outcomes of 566 LSCH and

450 TLH procedures for benign disease conducted by Harmanli et al⁹ showed decreased vaginal cuff cellulitis with LSCH, with an adjusted odds ratio of 1.29.

LSCH may prevent vaginal leakage of intraperitoneal chemotherapy. In our study, among the 104 cycles of intraperitoneal chemotherapy, there was no vaginal leakage of intraperitoneal chemotherapy. We were unable to locate any similar studies of LSCH for ovarian cancer and vaginal leakage of intraperitoneal chemotherapy. In a meta-analysis of patients treated with TAH, the rate of chemotherapy leakage ranged from 4% to 18% of patients.¹⁰ Leakage of intraperitoneal chemotherapy can lead to failure to complete chemotherapy, as was shown in a large phase III multicenter clinical trial of intraperitoneal versus intravenous chemotherapy in ovarian cancer (Gynecologic Oncology Group 172).¹¹ Interestingly, in a review of intraperitoneal chemotherapy, Markman and Walker¹² recommended SCH to prevent vaginal leakage of intraperitoneal chemotherapy but supplied no data to support their opinion.

CONCLUSION

We present a study of LSCH for ovarian cancer debulking or staging that resulted in no recurrence in the remaining cervical stump, no postoperative vaginal cuff infections, and no vaginal leakage of intraperitoneal chemotherapy. Although our results are encouraging, further studies are needed to confirm our findings.

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